American Journal of Physiology:
Endocrinology, Metabolism and
Gastrointestinal Physiology

Editor: R. LEVINE

Associate Editors:
R. N. BERGMAN
L. R. JOHNSON
R. P. ROBERTSON
D. RODBARD
G. SACHS
N. W. WEISBRODT

Editorial Board:
W. MCD. ARMSTRONG
J. D. GARDNER
W. S. REHM
M. I. GROSSMAN
S. S. ROTTMAN
P. BASS
S. J. HERSEY
N. B. RUDERMAN
A. BORLE
G. J. HETENYI, JR.
L. B. SALANS
M. C. CAREY
B. G. HOEBEL
H. P. SCHEDL
J. H. CLARK
L. S. JACOB
P. H. SMITH
P. CHYER
E. J. JACOBSON
J. G. SPENNEY
H. T. DeBAS
L. S. JEFFERSON
D. STEINBERG
A. S. DUNN
I. J. KOPIN
R. UNGER
J. H. EXTON
I. M. LICHTENBERGER
M. VHRANIC
P. FELIG
D. L. LORIAUX
J. H. WALSH
M. FIELD
A. MUNCK
H. O. WHEELER
F. I. FORKER
J. T. NICOLOFF
J. D. WOOD
I. B. FRITZ
J. M. PHANG
S. C. WOODS
R. A. FRIZZELL
H. B. POLLARD
E. M. WRIGHT
L. A. FROHMAN
D. RABIN
S. S. C. YEN

Publications Committee of
the American Physiological Society

S. R. GEIGER
Publications Manager and
Executive Editor

W. A. SONNENBERG
Business Manager

A. P. FISHMAN, Chairman
R. M. BERNE
H. E. MORGAN

B. B. RAUNER
Production Manager

J. RENO
Copy Editor

Address all editorial and
business correspondence to:
AMERICAN JOURNAL OF
PHYSIOLOGY
9650 Rockville Pike,
Bethesda, MD 20014

Second-class postage paid at Wash-
ington, DC and at additional mail-
ing offices. Copyright © 1979 the
American Physiological Society;
however, the abstract appearing at
the beginning of each article may
be reproduced in any form, or trans-
slated, without specific permission
and without an additional credit
line. Printed in the United States of
America. The code at the bottom of
the first page of an article indicates
the copyright owner's consent that
copies of that article may be made
beyond that permitted by sections
107 and 108 of the U.S. Copyright
Law—unless the copies are for gen-
eral distribution, for advertising, for
creating new works, or for resale—
provided the per-copy fee is paid
through the Copyright Clearance
Center, Inc., Operations Center,
P.O. Box 765, Schenectady, NY
12301.
The American Journal of Physi-
ology: Endocrinology, Metabolism
and Gastrointestinal Physiology is
published monthly by the Ameri-
can Physiological Society. Two vol-
umes published annually.
Subscription Price: $45.00 per year
postpaid in the United States.
Postage to Canada, $3.00 per year
extra, postage to countries of the
Pan American Postal Union and to
other countries, $5.00 per year ex-
tra. Subscriptions from outside the
United States are payable in U.S.
currency or full equivalent. Sub-
scriptions are accepted on a calen-
dar-year basis only.

Single Copies; Back Issues: When
available, $5.50 each postpaid.
Change of Address: The Journal
must be advised of a change of ad-
dress at least 6 weeks prior to date
of issue, with both the subscriber's
old and new address given. Undeliv-
ered copies resulting from address
change will not be replaced.